Replacement of the Precipitation Gage Interface Box and Diode Box Instructions

Tools Included:

- Key
- Spacer (wood block)
- Small screw driver
- Electrical tape
- Clippers
- Razor Knife
- 3/16 Allen wrench
- Cell phone, if covered by service
- FedEx Return Label

Additional things to take to site:

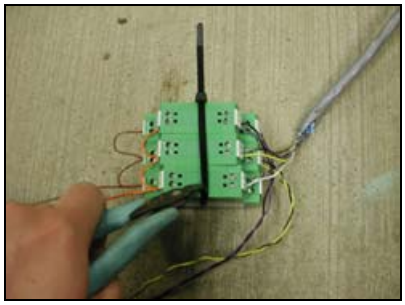
Container for waste antifreeze if needed
New antifreeze and oil if needed

When packing for shipment check CRN website for current liquid level. If site needs gauge emptied, indicate below in bold red ink.

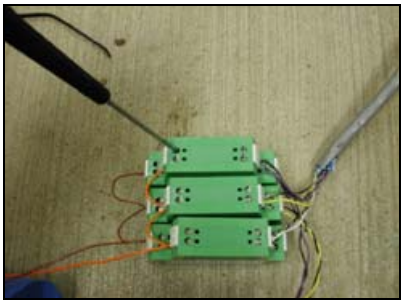
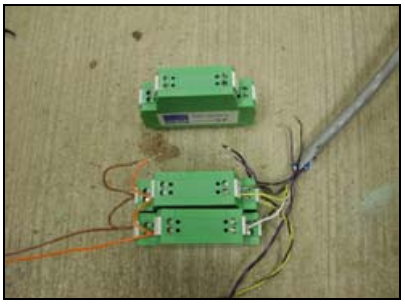
Interface Box Replacement

1. Open the door to the Control Box (need key).

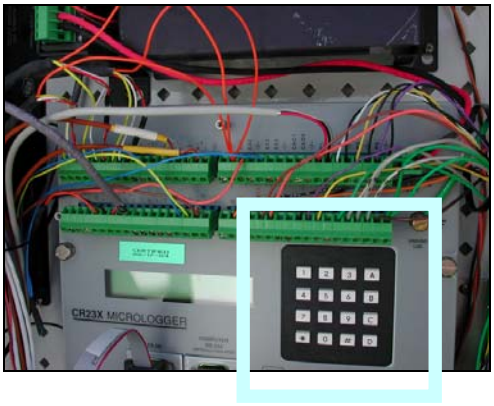

2. In the bottom of the Control box there will be three small green boxes. These are a signal interface for the Geonor gage signals. They most likely are zip-tied or taped together. Cut any tape or zip-ties so you can get to the appropriate box. The interface boxes have wiring points labeled, and are wired as follows: A-sensor +, B-sensor -, C-12 volts from Datalogger, E-signal to Datalogger+, F-signal ground to Datalogger. The three sensors have signal wires of different colors. #1 is white/black, #2 is yellow/black, and #3 is purple/black. The box that needs to be replaced is sensor_____ with _____ & _____ wires coming out of it.

3. Un-wire the box that needs to be replaced, and then wire in the new box making sure the correct wires go to the appropriate connection points. You may want to write these down before disconnecting the old interface box. Please be careful to keep the wire going to connection C from touching the wire to B, this will ground the 12 volts from the Datalogger.

4. Once the new box is wired in, confirm the sensor is working by keying *** 6 8 8 A** on the datalogger keypad.



The display will read: **trueHz1 ####.#**
trueHz2 ####.#

Key **A** to see **trueHz3 ####.#**

All three should read between 1000 and 3000 if working. If necessary key **B** to back up. *Key * 0 when finished.*

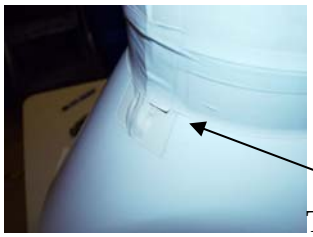
5. If **trueHz__** is between 1000 and 3000, then the green interface box was the problem and you are done. Close the Control box and return items to NOAA. If **trueHz__** is still 0 or very close to 0, then a box inside the gauge will need to be swapped. The following steps are to be completed only if **trueHz__** is still 0 or very close to 0 after swapping out the green interface inside the Control box.

Replacement of the Diode Box inside the Geonor Gage

6. Slowly release latches on the Precipitation Gauge Cover and pin in the up position.

7. Add a spacer to hold the cover up.

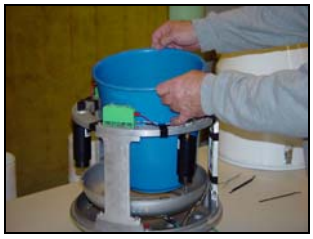
8. Locate the heater cabling and unplug.


The bulge helps locate the cabling.


9. Remove the cover noting the general position for replacement.

10. There are three sensors that support the carriage that supports the bucket. Each of the sensors has a thumbscrew on the side. Tighten the screws on all three sensors to prevent further damage. If the thumbscrews are not in the sensors, they are either in the bottom of the gauge under the bucket or inserted into holes along the top rim. If they are along the top rim, remove and insert into the sensors and tighten. If they are in the bottom of the gauge, do step 11, and then insert into the sensors and tighten and then continue.


11. Carefully lift the bucket up and out. The strain gauges are very sensitive to shock.

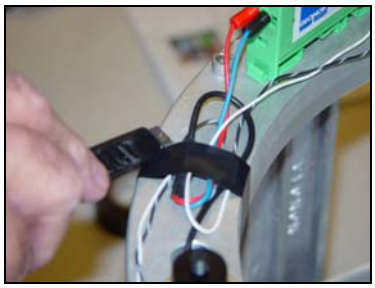


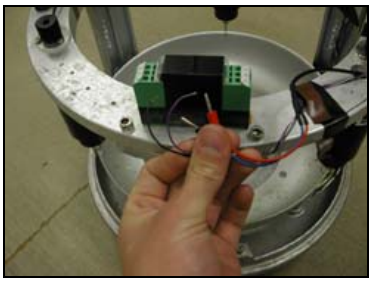
12. Empty the contents into a separate container if needed.

13. Looking at the serial number will identify the sensor associated with the diode box needing replacement. Also the signal wires leaving the diode box for this sensor should be a _____/black pair. The sensor you need to examine is serial number: _____

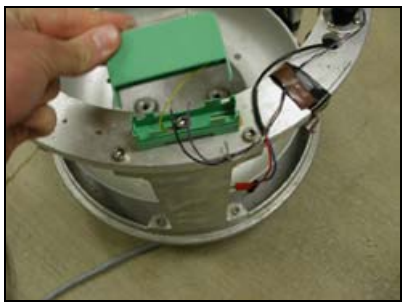
Serial number found here on sensor

14. Remove the sensor hook-up wires (red and blue) for the problem sensor by unscrewing the wire clamping screws on the terminal block. Then remove the two signal wires from the other side. Cut any tape or zip ties that are restraining the loosened wires.





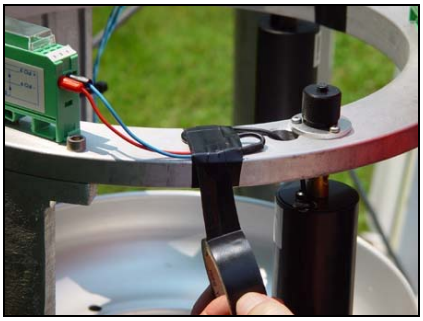
15. Remove the top of the box by using the small screwdriver to push in the two tabs, and then lifting up on the top of the box.



16. Use the Allen key to remove the bolt that is holding the bottom of the box to the gage and then remove the box.


17. Replace with supplied box. Make sure that the end of the box labeled with **1 3 5** is pointed toward the sensor. For the wires coming form the sensor, connect red to #**5** and blue to #**3**. For the other wires, connect _____ to #6 and _____ to #4. Tape the wires to the housing to eliminate slack.





18. Place the empty bucket back onto the carriage. ***Please be sure that nothing except the carriage is touching the bucket.***

19. Align the black dot on the bucket to the black dot at the mount on one of the sensors.

20. Loosen the thumbscrews on the sensors.

21. Check the datalogger to confirm the sensor is working by keying *6 88 A on the datalogger keypad.
    The display will read: trueHz1 ####.#
    trueHz2 ####.#

    Key A to see trueHz3 ####.#

    All should read between 1000 and 3000 if working, key B to back up. Record these numbers for confirmation in step 25. *Key * 0 when finished.*

    It is IMPERATIVE that '* 0' is keyed.

22. Add _____ Liters of anti-freeze and _____ Liters of hydraulic oil if needed.

23. **Check to make sure there is nothing touching the bucket or bucket cradle.** Any wires or cable ties that come in contact should be taped down or relocated. The bucket must hang free from the three sensors in order to make accurate measurements.

24. Replace the cover, remember to reconnect the heater plug before completely closing.

25. Again, check the datalogger to confirm the sensor is working by keying *** 6 8 8 A** on the datalogger keypad. The display will read:

trueHz1 ####.#
trueHz2 ####.#

Key **A** to see **trueHz3 ####.#**

All **trueHz** values should read very close to the same as recorded in step 18 if not, a wire is probably touching the bucket or bucket cradle due to replacing the heater plug and cover. If this is the case, remove the cover, make any necessary adjustments to insure nothing is touching the bucket or bucket cradle and replace the cover. Once again confirm the numbers from step 21.

26. **BE SURE TO KEY * 0.** Close the Control Box door and lock.